

Scientist Engagement Survey

To evaluate the collective impacts of the COSEE Network, COSEE needed to collect common data across the Centers. The COSEE Evaluation Working Group (EWG) was tasked with creating a systematic form of data collection to investigate the engagement of scientists and educators with the COSEE Network. This document summarizes the results of the 2009 and 2010 Scientist Engagement Surveys.

Members of the EWG include three COSEE Principal Investigators (PIs), six COSEE Center Evaluators, one National Advisory Council member, the National COSEE Office (NCO), National Network Evaluator (NNE) and the National Science Foundation (NSF). Each Center's evaluator provides vital input to EWG activities and works with their PIs and Centers to ensure high-quality data collection.

In early 2009, the EWG tackled the task of collecting common, cross-Center data on scientists and educators involved with COSEE. After a year of almost weekly conference calls dedicated to establishing definitions for scientists, educators and the types of activities that COSEE is engaged in, the EWG finalized in December 2009 a document entitled, *Recommended Scheme for Cross-Center Data Gathering* (known internally as the Bins Document). The Bins Document was designed to facilitate cross-Center data collection that could be gathered easily, generate credible information, result in compelling findings, and be cost effective. Part I of the Bins Document defines scientists and educators and establishes demographic data to be collected on scientists and educators. Part II of the document defines the main activities that COSEE Centers are engaged in, as well as demographic data on audiences the COSEE activities have served.

Using the Bins Document, the EWG was able to develop and draft questions for a Scientist Engagement Survey. This was COSEE's first cross-Center data collection effort. The 2009 Scientist Engagement Survey (<https://www.surveymonkey.com/s/X5G6NKM>) was launched in January 2010. There were 27 core questions inquiring about scientists' backgrounds and the form of their engagement with COSEE. This survey focused on scientists participating with Centers during the calendar year 2009. Final results from this survey became available in May 2010. Following the Scientist Engagement Survey, the EWG launched the Educator Engagement Survey in May 2010, and reported results in July 2010. (*For more on this, see the appendices in this Decadal Review package.*)

In January 2011, COSEE launched a second Scientist Engagement Survey (<https://www.surveymonkey.com/s/XZ3F9DF>). Building on lessons learned and insights gained from the two 2009 surveys, this survey included questions about benefits to scientists, in particular, how well COSEE assists with the NSF "broader impacts" criterion and what scientists gain from their relationship with COSEE. Questions on both the 2009 and 2010 scientist surveys used the same wording so that results could be compared, and all respondents were anonymous, as with the previous surveys.

The three engagement surveys over the past two years have been opportunities to develop and test cross-Center agreed-upon definitions, metrics and processes, but more importantly to generate reliable, consistent, coherent, and comparable Network-wide data about audience

participation in COSEE efforts. Survey results have also been used by Centers for their own purposes. Based on the results, and from future surveys, COSEE will continue to track and improve the Networks' professional services to the ocean sciences research and education communities.

2009 Results Summary

Respondents

From the 749 invitations to take the online survey, we received 487 responses (a 65% response rate, which is very high for such a survey). For an individual count of respondents for analysis, we carefully reviewed the data and eliminated those not involved with COSEE in 2009, those we could not verify from the survey data as scientists (respondents are anonymous) and duplicates (individuals who responded to two or more Centers' surveys). Of the 487 respondents, 315 (65%) individuals were identified as researchers/scientists and had been involved in COSEE in 2009. The results reported below are from these individuals.

No comparable project was found in the literature that contained indications of the reach or impact with this audience; thus meaningful comparisons cannot be offered. Also, given that NSF has not been able to provide an accurate count of the number of ocean scientists, we cannot provide a percentage of the audience that the survey respondents represent. We view the 315 scientists as a baseline number and anticipate that changes can now be tracked over time. This was a pioneering survey for COSEE, a major step to substantiate, quantify, and refine the extent of involvement by ocean scientists with the COSEE Network.

Demographics

From the results, we found that the scientists working with COSEE are a diverse and accomplished group. They are employed at agencies and institutions in 32 states. Thirty-seven percent received NSF funding for their scientific research. A substantial majority (71%) holds doctoral degrees, and of those who teach at the post-secondary level almost half (45%) are tenured. They are roughly equally early-career (28%), mid-career (32%) and advanced-career (25%) professionals, and bring to COSEE expertise from a wide range of research disciplines. They are nearly equally female (45%) and male (55%), and their racial background is predominantly white (89%).

Forty percent of those responding have been involved with COSEE for three or more years. The majority of these scientists were engaged with COSEE in 2009 as participants (72%) in workshops, seminars or other activities, but scientists also provided resources (41%), were advocates/advisors (25%) and/or partners (18%), and 7% indicated they were leaders within COSEE. *(Use survey link for details regarding the categories.)*

2010 Results Summary

Respondents

The second Network-wide COSEE Scientist Engagement Survey focused on scientist/researchers engaged with COSEE during the 2010 calendar year. From the 872 invitations to take the online survey, we received 492 responses (a high 56% response rate). For an individual count of

respondents for analysis, we carefully reviewed the data and eliminated those not involved with COSEE in 2010, those we could not verify from the survey data as scientists (respondents are anonymous), and all duplicates (individuals who responded to two or more Centers' surveys). As a result, we are reporting on the responses of 397 individual scientists/ researchers who were engaged with COSEE during 2010.

This 2010 cross-Center survey generated a second set of reliable, consistent, coherent, and comparable data about scientists' engagement in COSEE, and, for this year, the benefits that they derive from COSEE.

Demographics

We found that the scientists engaged with COSEE are a diverse and accomplished group. A substantial majority (67%) holds doctoral degrees, and 42% of those teaching at the postsecondary level are tenured. They are roughly equally early-, mid- and advanced-career professionals (23%, 30% and 27% respectively), and bring to COSEE expertise from a wide range of disciplines. Gender is nearly evenly split (53% male; 47% female) and the racial background is predominantly white (88%). Scientists work at nearly 200 universities, agencies and other institutions located in 34 states and a few foreign countries.

The majority of scientists were engaged with COSEE in 2010 as participants in programs, activities, etc. (70%), but a substantial number also served as resources (41%), were advocates/ advisors (23%) and/or partners (24%). Nine percent considered themselves leaders within COSEE. *(Use survey link for details regarding the categories.)* Nearly half (48%) of the respondents received NSF funding for their scientific research.

These results are consistent with those from the COSEE 2009 Scientist Engagement Survey. In 2010 we added a question about the source of funding within NSF. Of those with NSF funding for research, 64% received support from the Division of Ocean Sciences (OCE). Twenty-nine percent of all respondents have included COSEE or a COSEE partner in a research proposal.

Benefits

This year's survey asked about NSF's "broader impacts" criterion and COSEE's assistance to scientists in meeting that criterion. Seventy percent of scientists said that their level of involvement in "broader impacts" has increased as a result of being involved with COSEE, with 16% indicating it has increased a lot. Asked how helpful COSEE has been with each of NSF's "broader impacts" categories, scientists responded that COSEE has been very helpful with broadening participation (32%), broadening dissemination (31%), advancing discovery (30%), benefits to society (26%) and enhancing infrastructure (19%). *(Use survey link for details regarding the categories.)*

An open-ended question asked scientists to comment on the benefits they have gained from COSEE. The top benefits categories (in order) are: making connections with the formal K-14 education community, including teachers and students; acquiring communications skills and science research "translation" skills; access to a vast education and outreach network; connecting with collaborators and partners; understanding the needs and challenges of the education

community; and gaining assistance with NSF-required broader impacts. *(See the report in the Decadal Review package appendices for details.)*

COSEE's engagement surveys, which involve all COSEE Centers and the NCO, continue to strengthen Network-wide understandings and working relationships. Based on these results, and those from future surveys, COSEE will continue to track and improve the Networks' professional services to the ocean sciences research and education communities.

More detailed reports for these surveys are available in the appendices of this Decadal Review package.